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Palaeoanthropology in Kenya: After discovery of the Taung Child

Significance:

The discovery of the Taung Child was a significant milestone that not only challenged the then-prevailing belief in humanity's Eurasian origins but also inspired a new wave of palaeontological research across the African continent, particularly in eastern Africa. This discovery provided compelling evidence supporting Darwin's theory of an African ancestor for all hominins. The impact of this discovery can be seen in the surge of palaeontological surveys in eastern Africa, which have, over the years, yielded a wealth of fossilised fauna remains, including outstanding hominin fossils from the eastern African sites.

[*Translation in Setswana*]

Introduction

The Taung Child, a juvenile hominin fossil discovered in 1924 in South Africa, not only stimulated palaeoanthropological research on the African continent but also had a global impact. Raymond Dart¹ designated the Taung Child *Australopithecus africanus* – 'Southern Ape of Africa'. This profound discovery shaped our understanding of human origins and laid the foundation for further research in the field and at African sites. Prior to the discovery of the Taung fossils, several other hominin remains were recovered in Africa, including the Boskop skull by Robert Broom² and the Kabwe cranium by Arthur S. Woodward³. These finds, however, represent the later period of human evolution as they exhibit more derived features. In contrast, the significant discovery of the Taung Child presented what would be considered an early hominin ancestor, thereby challenging the then-prevailing belief in humanity's Eurasian origins. The claim of an African ancestor of all hominins also ignited a new chapter in the study of human evolution in other parts of the continent.

Dart's interpretation of the Taung fossils was dismissed for a considerable time by renowned scholars of the day, among them Sir Arthur Keith.⁴ Keith argued that the fossils were contemporaneous with Middle Stone Age tools found on a river bed near the site of discovery.

In addition, he and others were partly influenced by the Piltdown discovery of a cranium with a large human brain associated with an ape mandible and teeth published by C. Dawson.⁵ Many scholars of the time saw the Piltdown skull as ancestral to humans, a view that contrasted with the evidence provided by the Taung Child's tiny brain. Coupled with the then-popular belief of a Eurasian origin of humans, the Piltdown claim further hindered the acceptance of Dart's discovery.

In the 1950s, a pivotal change occurred in favour of Dart's interpretations of the Taung Child, triggered by the jolting revelation that the Piltdown man believed to be a crucial missing link in human evolution was a deliberate hoax.⁶ This prompted many scholars to reconsider the Taung Child's significance in the human evolutionary discourse. It may also be worth noting that Broom's work in South Africa was making an impact by the late 1940s, and his volumes between 1946 and 1952 in the *Transvaal Museum Memoirs* were instrumental.

From south to east: The onset of palaeoanthropological research in Kenya

Following the discovery of the Taung Child, the fever for palaeoscience quickly expanded to encompass even more regions of the continent, particularly eastern Africa. In Ethiopia, despite palaeontological work in the Omo Valley having started as early as 1902⁷, systematic palaeoanthropological research commenced only in 1967, once F.C. Howell and L.S.B. Leakey joined the French team. It is interesting to note here that this second expedition to the Omo Valley came only after the Piltdown claim was conclusively dismissed, allowing for the global acceptance of Africa as the origin of early hominins. Palaeoanthropological research in Kenya and Tanzania, then British colonies, was well underway by the 1950s. Such a head start in advanced palaeoanthropological research was responsible for the discovery in 1967 of early human fossils in Omo Kibish, Ethiopia, by R.E. Leakey's team from the Kenyan National Museums. Palaeoanthropological research in Ethiopia would only see further discoveries and efforts at capacity building after the discovery of sites in the Afar Rift in 1974.⁸

Influenced by the Taung discovery, and also by Charles Darwin's prediction that our early human ancestors lived on the African continent, Louis and Mary Leakey began their surveys in eastern Africa. They were among the pioneering researchers in the region who significantly contributed to the study of human evolution in eastern Africa.

The couple strongly believed that the East African Rift Valley held the potential for discovering hominin fossils, and their predictions were emphatically proven correct when promising sites emerged in various parts of the Kenyan and Tanzanian rifts.⁹⁻¹² These discoveries were proof that ancient hominin remains were not restricted to southern Africa but also occurred in eastern Africa. Interestingly, today, the eastern African sites have yielded far older and more diverse fossils of hominins, e.g. *Orrorin tugenensis* in Kenya dated to ~6 Ma¹³, and *Ardipithecus kaddaba* in Ethiopia dated to between 5.8 Ma and 5.5 Ma¹⁴.

Louis and Mary Leakey initially worked at several Stone Age sites, generating substantial data on hominin cultural adaptations during this period.¹⁵ In addition, they worked at some Miocene sites in western Kenya, including the Rusinga and Mfangano islands, where they recovered abundant early Miocene ape fossils, initially designated *Proconsul africanus* by Hopwood¹⁶ and later *Proconsul heseloni* by Walker et al.¹⁷ This ancient ape species was later

re-assigned to *Ekembo heseloni* based on significant anatomical features emphasising differences from the genus *Proconsul* by McKnaulty et al.¹⁸ In the early 1950s, perhaps influenced by the global acceptance of the Taung Child as the earliest hominin ancestor, Louis and Mary Leakey moved their research interests to Tanzania, where they spent many years working at the early Pleistocene beds at the Olduvai Gorge. One of their significant discoveries at Olduvai Gorge was the *Paranthropus boisei* skull found by Mary in 1959 and dubbed 'Zinjanthropus'.

After Louis's death in 1972, Mary took over the leadership of palaeoanthropological research activities in Tanzania. In 1974, she shifted her research interests to Laetoli within the Serengeti National Park, where she excavated a track of *Australopithecus afarensis* footprints in 1978^{19,20}, dated to 3.6 million years. These hominin footprints highlighted the bipedal gait of the species, thus resolving a critical debate at the time. Although Louis Leakey is regarded as the father of palaeoanthropology in eastern Africa, Richard Leakey – his son – tremendously expanded palaeoanthropological research in Kenya by discovering numerous early hominin fossils from the rich fossil-bearing sediments of the Lake Turkana Basin.

Major palaeoanthropological sites in Kenya

Close to 90% of palaeoanthropological fossils in Kenya derive from the Lake Turkana Basin in the country's northwestern part. The Basin contains rich and extensive fossiliferous deposits of Plio-Pleistocene age associated with the ancestral Omo River and its tributaries. These fossil-bearing sediments, known as the Koobi Fora and Nachukui Formations, are located east and west of Lake Turkana, respectively. They are divided into various members spanning the last 4 million years.

The members within these formations have been extensively studied, yielding hundreds of early hominin fossils and footprints, a plethora of faunal remains, as well as some of the earliest known evidence for hominin material culture, including evidence for domestication.

Koobi Fora was discovered by Richard Leakey in 1967 while flying back to Nairobi from the Omo expedition in Ethiopia. At the time, he was a member of the International Omo Research Expedition, coordinated by F.C. Howell, Yves Coppens, and Louis B. Leakey from 1967 to 1973. On one specific flight, Richard flew along the eastern margins of Lake Turkana, where he noticed fossil-bearing sediments along the lake's surrounding areas from above. Upon conducting a subsequent ground survey, he and his team spotted extensive rich fossiliferous deposits containing fossilised animal remains at Koobi Fora that warranted immediate exploration and recovery measures. This discovery necessitated the change of research interests from Omo in Ethiopia to Koobi Fora in northern Kenya. Following these changes, Richard formed the Koobi Fora Research Project in the early 1970s – a multinational and multidisciplinary expedition that was instrumental in the discovery of hundreds of fossilised animal fossils, among them a significant number of early hominin taxa (Table 1).^{21–25} The outstanding

discoveries include various species of *Homo* and *Paranthropus*, among many others. Similarly, research on the Nachukui Formation within the western Turkana Basin has yielded hominin species, among them a partially preserved *Homo erectus* skeleton (dubbed the 'Turkana Boy') from the Nariokotome member within the Nachukui formation.^{26,27} The late Kamoya Kimeu – a renowned Kenyan fossil hunter – is celebrated for the discovery of the 'Turkana Boy' in 1984.

Upon Richard's departure to take up a government position, Meave Leakey assumed the mantle as the Koobi Fora Research Project coordinator jointly with Alan Walker and Kamoya Kimeu. Meave and her team continued palaeoanthropological surveys in the western and eastern parts of the Lake Turkana Basin, where they recovered numerous Pliocene human fossils at Kanapoi and Allia Bay.

Present and future of palaeoanthropology in Kenya

For a significant period in the past, palaeoscience research in Kenya was predominantly undertaken and led by scholars from the Western world. This was due in part to the absence of relevant courses at local universities to equip students with relevant palaeoscience knowledge as well as the limited funding for overseas training. Some Western scholars' reluctance to promote African scholars' participation in palaeoscience was driven by questionable motives and outdated colonial mindsets. This fear of increased competition from local talent hindered African scholars' involvement in the field of palaeoanthropology for a long time.

In the early 1980s, however, a notable shift began. Despite the prevailing difficulties, several Kenyans, propelled by their passion and determination and supported by some well-wishers from the Western world, secured graduate opportunities to study archaeology in Berkeley, California, USA, under the late Prof. Glynn Isaac, himself a son of South Africa, and Prof. Desmond Clark. This marked a pivotal moment, and in the early 1990s, more Kenyans secured sponsorships to study palaeoanthropology and geology at US and European universities. Simultaneously, funding agencies in palaeoscience, e.g. the Leakey Foundation, Wenner Gren, Palaeontological Scientific Trust (PAST) and others, opened programmes for supporting training in palaeoscience, particularly for young African scholars. This period also saw the National Museums of Kenya developing research policies and rules that promoted involvement in collaborative research ventures between visiting international and Kenyan scholars. Such policies significantly increased the numbers of Kenyans trained in palaeoanthropology to hold positions and lead field expeditions.

The research policies at the National Museums of Kenya underscore the importance of building capacity for Kenyans through training, particularly at the graduate level. Under such a requirement, all palaeoanthropological research expeditions in Kenya are required to train at least one Kenyan scientist for a graduate degree. Today, this requirement has boosted the training of Kenyans in palaeoanthropology, and many young Kenyans have benefitted.

Table 1: Hominins discovered from Kenyan sites

Taxon	Site name	Age (Myr)
<i>Orrorin tugenensis</i>	Kapsomin, Baringo	6 – 5.7
<i>Australopithecus anamensis</i>	Lomekwi, West Turkana	4.1 ± 0.1
<i>Kenyanthropus platyops</i>	Lomekwi, West Turkana	3.3 ± 0.1
<i>Australopithecus afarensis</i>	Kantis Fossil Site	3.6
<i>Paranthropus aethiopicus</i>	West Turkana	2.52 ± 0.05
<i>Paranthropus boisei</i>	Koobi Fora, West Turkana, Chemeron	1.70 ± 0.05
<i>Homo rudolfensis</i>	Koobi Fora	1.89 ± 0.05
<i>Homo habilis</i>	Koobi Fora	1.89 ± 0.05 – 1.4
<i>Homo erectus</i>	Koobi Fora, West Turkana	1.6 ± 0.05 – 1.57 ± 0.05

In the recent past, the late Prof. Isaiah Nengo and his team, with their dedication and vision, led the formation of Kenya's first graduate programme in the palaeosciences – the MSc programme in Human Evolutionary Biology – at the Turkana University College (Lodwar). This programme, taught entirely by volunteer international researchers, is exclusively for Kenyan nationals. All students are fully funded, and eight (8) students have completed or are on the verge of completing the programme. Many have since been propelled into top PhD programmes – e.g. Emmanuel Aoron (Harvard University), Pauline Mbatha (University of Helsinki), Linet Sankau (Arizona State University), and Aggrey Minya (University of Memphis).

The collaborative programme between Turkana Basin Institute and the Turkana University College is a boost to Kenyan palaeoscience, and has been instrumental in supporting and fostering promising young graduate students into PhD programmes abroad. This initiative, one of the most successful of its kind, has not only bolstered the individual careers of these students but also the broader landscape of Kenyan science. Many of these students have taken up leadership positions in major fieldwork projects in Kenya – a testament to the programme's impact on the future of the field.

Many local Kenyans are involved in individual and collaborative research ventures as principal or co-principal investigators. For instance, I am the principal investigator of the Kantis Fossil Site Research Project and collaborate with other international scholars on other sites in Kenya. Moreover, an increasing number of Kenyans are now conducting their own palaeoanthropological/palaeontological programmes, such as the West Turkana Research Project in the Turkana Basin, the Koobi Fora Field School and Research Programme, the Nyeri/Laikipia Paleontological Research Project and the Locherangan Palaeontological Research Programme. Of worthy mention is the growing number of Kenyans undergoing graduate studies internationally, whom we expect will take the discipline into the future.

The progress made in palaeoanthropological research in Kenya, and eastern Africa more broadly, over the past 80 years is evident. This success was greatly influenced by the discovery of the Taung Child in South Africa in 1924, which demonstrated that Africa was the birthplace of humanity and sparked interest in fossil field surveys.

It is important to note the significant growth of local scholars who are now actively engaged in palaeoscience research. Their contributions, in the form of scientific papers and data, are shared at the biennial Eastern African Association for Palaeoanthropology and Palaeontology (EAAPP). The EAAPP plays a crucial role in knowledge sharing and mentorship, highlighting the importance of collaboration in our field and creating a sense of belonging within the larger scientific community.

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Declarations

I have no competing interests to declare. I have no AI or LLM use to declare.

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